19980619.ba v02_n097.bam.980619 v02_n098.bam.980619

>From ???@??? Mon Jun 22 01:32:05 1998
Message-Id: <199806191820.NAA07052@sco.theporch.com>
Date: Fri, 19 Jun 1998 13:19:17 CDT
Subject: BOATANCHORS digest 2097

BOATANCHORS Digest 2097

Topics covered in this issue include:

1) Tubes to trade
by "Mort Denison" <mdenison@blazenet.net>
2) [Fwd: R390/390A Failures]
by laffitte@prtc.net (laffitte)
3) Wanted: R391 Manual
by Paul Bernhardt <bern@ppdu.nrl.navy.mil>
4) RE: Bugle Boys?
by "Steve" <scb@mail.internettport.net>
5) batting .500 on HB ID
by MNHopkins@aol.com
6) Re: HQ-129X osc.
by "Steve" <scb@mail.internettport.net>
7) Re: (Sencor) Tube Testing
by "Steve" <scb@mail.internettport.net>
8) R-391 manual
by w2ec@VNET.IBM.COM
9) FS: SB-610
by "Joseph W. Pinner" <kc5ijd@sprintmail.com>
10) Modifying Mil. Boatanchors
by Andre Guibert <aguibert@sympatico.ca>
11) first computer ?
by Pete McCollum 19-Jun-1998 0753 -0600 <mccollum@ssdevo.ENET.dec.com>
12) 30+ paper items. http://wits.atl.org
by "Bob Duckworth" <wb4mnf@atl.org>
13) clarification on first computer question
by Pete McCollum 19-Jun-1998 0820 -0600 <mccollum@ssdevo.ENET.dec.com>
14) Re: first computer ?
by Al Parker <anchor@coastalnet.com>
15) RE: clarification on first computer question
by "Owens, Clarence" <owensc@nebeng.otis.com>
16) Re: clarification on first computer question
by Thomas Lewandowski <tpl.dsc@discnet.com>
17) First tube computer
by w2ec@VNET.IBM.COM
18) RE: clarification on first computer question
by "Laudon, Kenneth (Kalman) A." <klaudon@pica.army.mil>
19) Re: clarification on first computer question

by Nick England <nick@cs.unc.edu>
20) re: First Computer
by "Mike O'Brien" <mobrien@lib.drury.edu>
21) Early Electronic Computers
by WJoeW@aol.com
22) Re: Early Electronic Computers
by Bill Hawkins <bill@iaxs.net>
23) Vacuum Tubes
by "Richand" <rbrunner@gis.net>

From: "Mort Denison" <mdenison@blazenet.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Tubes to trade
Date: Thu, 18 Jun 1998 20:52:10 -0400
Message-ID: <000201bd9b1c$7d680300$07076818@mdenison>
MIME-Version: 1.0
Content-Type: text/plain;
charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

I've got more spare tubes for my R390A's then is left in my lifespan.

Unfortunately, I got some very old boatanchors that I don't have spares for.

Maybe someone out there is in the reverse situation.

NIB - New in box
UIB - Used in white box (?)

All test good on my Triplett 3444A

QTY	Type	
10	5654	UIB
4	5749	UIB
8	12AU7A	UIB
4	6AQ5A	NIB
4	0A2	UIB

I've also got a TS-382D audio oscillator. It looks good but it bellied up between turn on's - around 10 years. Probably needs recapped. It's really heavy and probably couldn't ship it...

What I need are some globe (not ST) type tubes: UX/UY226, UX/UY227 and 171A tubes. They're for use and display so need to test good and look good.

Looking for an Atwater-Kent horn speaker in working condition, too.

Hopefully thanks,

Mort Denison
York, PA

```
------------------------------
Message-ID: <3589C3BD.4020E517@prtc.net>
Date: Thu, 18 Jun 1998 22:49:55 -0300
From: laffitte@prtc.net (laffitte)
MIME-Version: 1.0
To: Old Tube Radios <boatanchors@theporch.com>
Subject: [Fwd: R390/390A Failures]
Content-Type: multipart/mixed; boundary="------------9C87313D4306B0DB45BC0F39"

This is a multi-part message in MIME format.
--------------9C87313D4306B0DB45BC0F39
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
```

Hi Gang:

Time to update the Most Common Failures of the R390/390As. As you remember, this list included the components that were commonly found to fail in these receivers. I am forwarding the original list to all of you. If you have any new additions, please inform me to add them into this year's list. Thanks for the help!

Best 73s
Guido KP4FAR

```
--------------9C87313D4306B0DB45BC0F39
Content-Type: message/rfc822
Content-Transfer-Encoding: 7bit
Content-Disposition: inline

Return-Path: <owner-boatanchors@theporch.com>
Received: from sco.theporch.com ([207.234.31.38]) by wmail.prtc.net
          (Netscape Mail Server v1.1) with ESMTP id AAA79002
          for <laffitte@prtc.net>; Thu, 9 Oct 1997 21:31:30 -0500
Received: from sco.theporch.com (localhost [127.0.0.1])
     by sco.theporch.com (8.8.7/SCO-5.0.4) with SMTP id UAA21048;
     Thu, 9 Oct 1997 20:32:47 -0500 (CDT)
Received: from wmail.prtc.net (prtc.net [204.146.71.211])
     by sco.theporch.com (8.8.7/SCO-5.0.4) with ESMTP id UAA20963
     for <boatanchors@theporch.com>; Thu, 9 Oct 1997 20:31:26 -0500 (CDT)
Received: from laffitte ([204.146.77.176]) by wmail.prtc.net
```

```
          (Netscape Mail Server v1.1) with SMTP id AAA96312
          for <boatanchors@theporch.com>; Thu, 9 Oct 1997 21:27:25 -0500
Message-Id: <343D7711.777E@prtc.net>
Date: Thu, 09 Oct 1997 21:30:09 -0300
Reply-To: laffitte@prtc.net
Sender: owner-boatanchors@theporch.com
From: laffitte@prtc.net (laffitte)
To: Old Tube Radios <boatanchors@theporch.com>
Subject: R390/390A Failures
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
X-Mailer: Mozilla 3.0 (Win95; U)
X-Listprocessor-Version: 8.1 -- ListProcessor(tm) by CREN
```

OK Gang:

After asking the combined experience of this list for most common failures in our beloved 390/390A series I was able to get the following list. I have listed components by number. An asterisk indicates R390(nonA) reported failure. I know this is not impressive but is all I got so here it goes.

```
 Most common reported failures in the R390/390A

 Tubes- 26Z5s rectifiers
        3TF7  Ballast

 Capacitors- C-608*
             C-609
             C-606
             C-553
             C-311
             C-292 (1,2,3 in the cans of the 2-3MHz variable IF)

 RESISTORS- R-626*
            R-625*
            R-515
            R-520
            2.2Kohm caps in RF subunit (not specified)
            R-220
            100ohm cathode resistor in the IF subunit

 TRANSFORMERS- T-201
               Z503
               power trans.

 RELAYS- Muting relay in 390
```

PTOs- Problems with endpoint adjusment of the COSMOS PTO.
Stuck slug inside L702

Miscellaneous- RF slugs loose from springs or stuck
microswitch
8mhz HR-202 crystal
Shaft clamps of the mechanical tuning gear
Crystals from the crystal osc. subunit
Dirty RF bandswitch
Gears out of synchronization

Well, as you can see that's all that came through. My most sincere thanks to all those who collaborated in providing information like

Dave W0NBZ (W0NBZ@juno.com)
Pete Mc Collum (mccollum@ssdevo.ENET.dec.com)
AL WA0HQQ (tirevold@atl.mindspring.com)
Joe S. (JESelkregg@aol.com)
Benjamin Hall

Please excuse any omissions and let me know ASAP.

I hope this is of help to all of us at some time or another in the maintenance of our venerable receivers. There is probably much more information out there which I encourage you to add to this list.

TNX and best 73s to all
Guido E. Santacana KP4FAR
BA collector in the tropics

--------------9C87313D4306B0DB45BC0F39--

Date: Thu, 18 Jun 1998 23:07:36 -0400 (EDT)
From: Paul Bernhardt <bern@ppdu.nrl.navy.mil>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Wanted: R391 Manual
Message-Id: <Pine.A32.3.91.980618230600.35442A-100000@ppdu.nrl.navy.mil>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

BA Gang,
Does anyone have a copy or original R391 manual for sale?
Thanks, Paul Bernhardt

```
Work:P.A. Bernhardt                Home: Paul Bernhardt, KF4FOR
     Code 6794                           5704 Ridge View Dr.
     Naval Research Laboratory           Alexandria, VA 22310
     Washington, DC 20375
Tel: 202-767-0196                        703-960-9656
FAX: 202-767-0631
```

```
Message-Id: <199806190539.AAA05504@loki.internettport.net>
From: "Steve" <scb@mail.internettport.net>
To: Old Tube Radios <boatanchors@theporch.com>
Date: Fri, 19 Jun 1998 00:17:53 +0000
MIME-Version: 1.0
Content-type: text/plain; charset=US-ASCII
Content-transfer-encoding: 7BIT
Subject: RE: Bugle Boys?
CC: boatanchors@theporch.com
```

Hi There;
Thanx all for the replies. Been reminded that the logo was Amperex, a cartoon anthromorph tube "playing" a horn. Seem to recall that it was a valve(!) trumpet. Haven't seriously played with my stereo set since progressive heredity deafness started blunting my ears, leaving more time for my other toys anyway. Besides, those sand crystal thingies they're using in audio stuff these days have gotten pretty good. Well, back to the BC-348L project (JAN equipped).
Regards; Steve

```
From: MNHopkins@aol.com
Message-ID: <b193b584.3589f874@aol.com>
Date: Fri, 19 Jun 1998 01:34:43 EDT
To: Old Tube Radios <boatanchors@theporch.com>
Mime-Version: 1.0
Subject: batting .500 on HB ID
Content-type: text/plain; charset=US-ASCII
Content-transfer-encoding: 7bit
```

It was not much to go on. No tubes, just two holes, 9-pin and 7-pin. There were Motorola connectors which say mobile or very smart VHFer, but one of the coils had LOTs of wire. That can mean an BCB IF output, of course, and it looked like a converter -- but no xtal.

People give me homebrew or ask me to ID it with original articles, perhaps because I am known to beleive that a HB TX will serve one better than an SX-88 in the next understanding. I use a 6AG7/2E26 MOPA that has elements of several period pieces. (W5FRS gave me a coil form to wind a 30M plug in for it.)

I have been after this mystery for a while, thinking it perhaps from the Leroy May estate (W5AJG/W5HN, 6M WAS #4) ,and now I have it -- it is a "WA2AEF Converter-ette" from The Radio Amateurs' Mobile Handbook, Orr, W. (W6SAI), Cowan Publishing, 1953 p 42. It needs a 6BH6 and 6U8 to convert 75M phone to your car radio -- the one with the vibrator power supply. It is unlikely Leroy made it as it is a close copy and Leroy was an innovator/modifier who was on 1296 sideband with a diode ring back when.

But I am only batting 500 as I cannot ID a 6M TX said to be built in the "on stilts" style of the ARRL 2M Novice TX from the mid '50s and using a 6BQ6 in the PA..

The two meter stations were built on chassi about 5x3x11 and placed in homebrew racks made by strips of one by 2 -- Tuner on top, then TX and P/S, modulator on bottom if memory serves. The "sidesaddle" 807 linear from the SSB handbook is built similarly. But I never saw one for 6M.

Should I tell the guy it is original HB??

73 de ab5L, michael in dallas, student of Tecraft and International (ICM) ham products and mementoes of Six Meters' Golden Age: 1957-58
Michael Hopkins
Box 226841
Dallas, TX 75222   MNHopkins@AOL.com

Message-Id: <199806190707.CAA06452@loki.internettport.net>
From: "Steve" <scb@mail.internettport.net>
To: Old Tube Radios <boatanchors@theporch.com>
Date: Fri, 19 Jun 1998 01:46:18 +0000
MIME-Version: 1.0
Content-type: text/plain; charset=US-ASCII
Content-transfer-encoding: 7BIT
Subject: Re: HQ-129X osc.
CC: boatanchors@theporch.com

"designs such as 6SA7, which got hazy at around 23 Mhz.----or 6A7/6A8,"

Greetings;
Noticed when I was living in Germany that most designers avoided the pentagrid converter (Euro"K" type) altogether and widely used the workhorse "CH" types single envelope oscillator/mixer, 'CH81 universally after about '54.
Some Belgians and the French used the RCA tubeset but don't recall if they used the American "A" series P'grids in autoconversion or some other osc/mix arrangement or even if they were used at all.

Was pentagrid autoconversion mainly an American practice?
 Regards; Steve Bringhurst

Message-Id: <199806190723.CAA06585@loki.internettport.net>
From: "Steve" <scb@mail.internettport.net>
To: Old Tube Radios <boatanchors@theporch.com>
Date: Fri, 19 Jun 1998 02:02:03 +0000
MIME-Version: 1.0
Content-type: text/plain; charset=US-ASCII
Content-transfer-encoding: 7BIT
Subject: Re: (Sencor) Tube Testing
CC: boatanchors@theporch.com

"BTW, my EICO 667 manual gives instructions on how to generate switch settings for any tube you can plug in. Do all tester manuals do this,"

Greetings;
 Had an EICO as my first TT, kit built. Yup, they were special! Don't know of any other that is as intuitive or adaptable. Possibly more sorry about loosing track of that tester than loosing my old AK-9 Variometer breadboard.
  Regards; Steve

From: w2ec@VNET.IBM.COM
Message-Id: <199806191151.GAA21151@sco.theporch.com>
Date: Fri, 19 Jun 98 07:47:33 EDT
To: Old Tube Radios <boatanchors@theporch.com>
Subject: R-391 manual

Paul, I got my R-391 manual from Fair Radio (a copy, not original). Normally I copy manuals for free and send them out, ie if they are standard hallicrafters/hammarlund/national/collins size, but as you can imagine the R-391 manual is BIG and I doubt I could copy it for the price Fair sells it at (about $20). Contact Fair Radio....

73, Ray W2EC

Message-Id: <199806191203.FAA01475@crow.prod.itd.earthlink.net>
Subject: FS: SB-610
Date: Fri, 19 Jun 1998 07:07:50 -0500
From: "Joseph W. Pinner" <kc5ijd@sprintmail.com>
To: Old Tube Radios <boatanchors@theporch.com>
Mime-Version: 1.0
Content-Type: text/plain; charset="US-ASCII"

I have a SB-610 Heath Monitor Scope that I no longer use.

It is working, though may need adjustment.

Physically, it is in good shape - front panel is fine. Normal wear on cabinet.

$ 85 plus shipping.

73

Joseph W Pinner
Lafayette, LA
KC5IJD
EMail: kc5ijd@sprintmail.com

Date: Fri, 19 Jun 1998 08:25:11 -0400 (EDT)
Message-Id: <199806191225.IAA24693@smtp11.bellglobal.com>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: Old Tube Radios <boatanchors@theporch.com>
From: Andre Guibert <aguibert@sympatico.ca>
Subject: Modifying Mil. Boatanchors

Bonjours to All

Quite curious to have your thoughts about modifying
either a Mil. or civilian Boatanchor to the latest
spec. or de modifying to original configuration.
The BC348 dimming rheostat comes to my mind and all
the mods. that the SCR522 whent thru in Mil. use between
1943 and the fifties.
And its a Go
Andre

Message-Id: <9806191353.AA20986@us3rmc.cxo.dec.com>
Date: Fri, 19 Jun 98 07:53:25 MDT
From: Pete McCollum 19-Jun-1998 0753 -0600 <mccollum@ssdevo.ENET.dec.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: first computer ?

Hi all,
My brother-in-law works for a large computer-game company, and he is
a designer on a game that involves "the first computer".
I volunteered to help with a little research.

So, what exactly was the First computer? Is there any single machine
that clearly was first?

What tube type/types were used as the basic logic elements?

Any historical anecdotes are appreciated.

Thanks,
Pete
mccollum@ssdevo.enet.dec.com

Message-Id: <199806191244.IAA04013@atl.org>
From: "Bob Duckworth" <wb4mnf@atl.org>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: 30+ paper items. http://wits.atl.org
Date: Thu, 18 Jun 1998 21:12:34 +0100

Have some 30+ paper items to sell at
http://wits.atl.org
It's easier for me to manage this way.

-bob
wb4mnf

Message-Id: <9806191420.AA22502@us3rmc.cxo.dec.com>
Date: Fri, 19 Jun 98 08:20:56 MDT
From: Pete McCollum 19-Jun-1998 0820 -0600 <mccollum@ssdevo.ENET.dec.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: clarification on first computer question

To clarify my "first computer" question, I'm looking for tube-technology
only - electro-mechanical doesn't count.

Pete

Hi all,
My brother-in-law works for a large computer-game company, and he is
a designer on a game that involves "the first computer".
I volunteered to help with a little research.

So, what exactly was the First computer? Is there any single machine
that clearly was first?

What tube type/types were used as the basic logic elements?

Any historical anecdotes are appreciated.

Thanks,
Pete
mccollum@ssdevo.enet.dec.com

Message-Id: <3.0.5.32.19980619104929.007b3750@mail1.coastalnet.com>
Date: Fri, 19 Jun 1998 10:49:29 -0400
To: Old Tube Radios <boatanchors@theporch.com>
From: Al Parker <anchor@coastalnet.com>
Subject: Re: first computer ?
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"

>
\>So, what exactly was the First computer? Is there any single machine
\>that clearly was first?
>
\>What tube type/types were used as the basic logic elements?
>

The ABACUS - early Chinese, totally digital.

73,
Al, W8UT
BOATANCHORS Enjoyed Here
anchor@coastalnet.com
New Bern, NC

Content-return: allowed
Date: Fri, 19 Jun 1998 11:06:00 -0400
From: "Owens, Clarence" <owensc@nebeng.otis.com>
Subject: RE: clarification on first computer question
To: Old Tube Radios <boatanchors@theporch.com>
Message-id: <0EUT0WBEQ006AL@mailman.otis.com>

Hi All,

I believe that the first tube digital computer of any size and note was the ENIAC. I can't look it up because I gave my sons my copies of "A Computer Perspective", a very nice little book that pictures the history of computing from the earliest days up into the late 50's (as I recall). These books were commissioned by IBM and were given to our customers back in the days when computer companies could afford really nice giveaways.

By the way, my all-time favorite in the book is the WWII pigeon-controlled bomb for naval use invented and developed (but never deployed) with the help of B. F. Skinner. Used three trained pigeons pecking at little mirrors in a majority logic scheme to steer the bomb to the ship. Must have had some tubes in there somewhere!

I'm sure that ENIAC will get hits from the web search engines.

73,

Clare Owens N2RJB
owensc@nebeng.otis.com

From: Pete McCollum 19-Jun-1998 0820 -0600
To: Old Tube Radios
Subject: clarification on first computer question
Date: Friday, June 19, 1998 10:20AM

To clarify my "first computer" question, I'm looking for tube-technology only - electro-mechanical doesn't count.

Pete

Hi all,
My brother-in-law works for a large computer-game company, and he is
a designer on a game that involves "the first computer".
I volunteered to help with a little research.

So, what exactly was the First computer? Is there any single machine that clearly was first?

What tube type/types were used as the basic logic elements?

Any historical anecdotes are appreciated.

Thanks,
Pete
mccollum@ssdevo.enet.dec.com

From: Thomas Lewandowski <tpl.dsc@discnet.com>
To: Old Tube Radios <boatanchors@theporch.com>
Message-ID: <358A851A.F58BD646@discnet.com>
Date: Fri, 19 Jun 1998 10:34:50 -0500

MIME-Version: 1.0
CC: Boatanchor List <boatanchors@theporch.com>
Subject: Re: clarification on first computer question
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

I remember seeing one at the Smithsonian back in 1981. Stood about 10 feet high with the back completely covered with tubes. I seem to recall all it could do was add.

Tom Lewandowski

Pete McCollum 19-Jun-1998 0820 -0600 wrote:

> To clarify my "first computer" question, I'm looking for tube-technology
> only - electro-mechanical doesn't count.
>
> Pete
>
> ---
> Hi all,
> My brother-in-law works for a large computer-game company, and he is
> a designer on a game that involves "the first computer".
> I volunteered to help with a little research.
>
> So, what exactly was the First computer? Is there any single machine
> that clearly was first?
>
> What tube type/types were used as the basic logic elements?
>
> Any historical anecdotes are appreciated.
>
> Thanks,
> Pete
> mccollum@ssdevo.enet.dec.com

From: w2ec@VNET.IBM.COM
Message-Id: <199806191536.KAA03577@sco.theporch.com>
Date: Fri, 19 Jun 98 10:28:25 EDT
To: Old Tube Radios <boatanchors@theporch.com>
Subject: First tube computer

To isolate this to a specific unit, we need to define "computer". This is often considered to be a device that performs math calulations, performs logical operations, and has storage capability. There are several tube units that meet objective 1 and/or objective 2, but don't have objective 3. Tube units meeting 1 or 2 go back to the early 30's.

I believe the first tube computer to meet all three objectives was Colossus in 1943, used by the British for code breaking. It contained 2400 tubes.

The most commonly thought of tube computer is ENIAC with over 17.000 tubes, but this really didn't come about until 1945.

73, Ray W2EC

Message-ID: <07E473510AF0D111ADFA00A0C9B4205226F74B@mail1.pica.army.mil>
From: "Laudon, Kenneth (Kalman) A." <klaudon@pica.army.mil>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: RE: clarification on first computer question
Date: Fri, 19 Jun 1998 11:40:16 -0400
MIME-Version: 1.0
Content-Type: text/plain

Clarence Owens wrote:

> By the way, my all-time favorite in the book is the WWII
> pigeon-controlled
> bomb for naval use invented and developed (but never deployed) with
> the help
> of B. F. Skinner. Used three trained pigeons pecking at little
> mirrors in a
> majority logic scheme to steer the bomb to the ship. Must have had
> some
> tubes in there somewhere!
>

This is a textbook example of how we (the US) came up with an original idea, that the Japanese then "borrowed" and improved upon greatly! By using a single, smarter pidgeon, they eliminated the need for the logic to compute the fire-control solution by majority vote. Also, the pidgeon requirement was reduced by 67 percent.

My week for sarcasm.

73, Kalman W2ES

Date: Fri, 19 Jun 1998 11:39:18 -0400 (EDT)
From: Nick England <nick@cs.unc.edu>
Message-Id: <199806191539.LAA21978@altair.cs.unc.edu>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: clarification on first computer question

Cc: boatanchors@theporch.com

The generally accepted answer for the first general purpose large-scale electronic computer (and the date used for the 50th anniversary celebration) is the ENIAC.
http://www.seas.upenn.edu/~museum/

I believe the patent courts ruled the Atanasoff ABC was the first electronic computer, predating the ENIAC. There is plenty of controversy though because it really depends on your definition of exactly what a computer is - the tube based German Zuse came before the ABC and the tube based British Colossus predates the Eniac.

For an excellent chronology see:
"A Chronology of Digital Computing Machines (to 1952)"
http://www.best.com/~wilson/faq/chrono.html

73 & Have Fun,
Nick England KD4CPL   nick@cs.unc.edu   Univ. Of North Carolina
http://www.cs.unc.edu/~nick/hobbies.html   Chapel Hill NC

Date: Fri, 19 Jun 1998 11:41:05 -0500 (CDT)
From: "Mike O'Brien" <mobrien@lib.drury.edu>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: re: First Computer
Message-ID: <Pine.A32.3.96.980619113550.11826A-100000@lib.drury.edu>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

I hesitate to toss in this, because I can't immediately lay my hands on documentation to back it up, but apparently some experiments were conducted in the 1930s at Iowa State or the University of Iowa that some historians credit as being the first successful application of tube-based electronics to perform complex math calculations.

Again, I apologize for muddying the water without means at hand to clarify the matter...

73, Mike, K0MYW

From: WJoeW@aol.com
Message-ID: <88e46a3b.358aa518@aol.com>
Date: Fri, 19 Jun 1998 13:51:19 EDT

```
To: Old Tube Radios <boatanchors@theporch.com>
Mime-Version: 1.0
Subject: Early Electronic Computers
Content-type: text/plain; charset=US-ASCII
Content-transfer-encoding: 7bit
```

Well, I know we are a little off track here, but thought this might be helpful:

Computer historians are in pretty good agreement, I believe, that the first vacuum tube computer was the so-called ABC machine (Anatasoff Berry Computer) built at Iowa State College by Professor John Atanasoff, Professor of Mathematics and Physics. It was a special purpose computer built for solving simultaneous linear equations. The final version of the machine was tested in the spring of 1942. He reported difficulty with reliable punching of the output cards. Wartime demands on Professor Atanasoff and his students curtailed further work on the machine.

A classified vacuum tube machine, Colossus, was built at Benchly Park and used for breaking German codes. The initial machine was installed in December, 1943.

The Electronic Numerical Integrator and Computer (ENIAC) was developed at the Moore School of the University of Pennsylvania under contract from the US Army. Development started in 1942, and the machine was operational in 1946. Professors Eckert and Mauchly were the principal designers of this machine and held the basic patent for the electronic computer until patent litigation over this ENIAC patent (1967-69) brought to light the Iowa State computer and the fact that John Mauchly had visited with Professor Atanasoff in 1940 or 1941 and received information on the ABC.

Earlier computers used electromechanical relays, instead of vacuum tubes, for logic and memory.

The Harvard Mark I, built by Professor Howard Aiken, was one of the most important developments toward a truly general purpose computer. It used electromechanical relays and became operational in 1943.

The Princeton team, led by John von Neumann, developed what is now known as the "von Neumann architecture", which has been the basis for most commercial electronic digital computers. This work was done in the late 1940's.

Details of all of these efforts can be found in the Institute of Electrical and Electronic Engineers Annals of the History of Computing, now in its 19th volume.

Joe Watson

Professor of Electrical Engineering
Oklahoma Christian University
Oklahoma City, OK
]

Date: Fri, 19 Jun 1998 13:11:14 -0500 (CDT)
From: Bill Hawkins <bill@iaxs.net>
Message-Id: <199806191811.NAA11208@citrus.iaxs.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Early Electronic Computers

How about hybrid computers, like MIT's Whirlwind? Lotsa relays, but also lotsa thyratrons. Grace Hopper found the first computer bug there, caught between the contacts of a relay - didn't she?

Perhaps a qualification ought to be "stored program" rather than wired patch panel, in order to be a computer.

Regards,
Bill Hawkins

Message-Id: <199806191817.OAA26925@home.gis.net>
From: "Richand" <rbrunner@gis.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Vacuum Tubes
Date: Fri, 19 Jun 1998 14:21:50 -0400
MIME-Version: 1.0
Content-Type: text/plain; charset=ISO-8859-1
Content-Transfer-Encoding: 7bit

Any vacuum tube Engineers out there?
According to all the handbooks, if there is a very small trace of gas in a tube, collision between gas molecules and electrons flowing to the anode will create positive ions. The positive ions fall into the cathode/filament destroying the emission of thoreated-tungsten and oxide-coated cathodes. This is the reason given why oxide-coated cathodes are not used in large power tubes operating at high plate voltages. (Ref. 1)

But, during WW2, tubes with oxide-coated cathodes were used in Radar modulators at quite high plate voltages. The 829B at 2 kV, the 3E29 (829B without internal mica spacers) at 8 kV, the 715B at 15 kV, and the 5D21 (much the same as the 715B) at 20 kV. (Ref. 2) Magnetrons, which also operate at qiote high voltages, also all use oxide-coated cathodes.

Perhaps this ;limitation is merely an "Old Engineer's Tale." which may have been true for a few years during the development of vacuum tube technology. It looks to me as though an oxide-coated cathode could be used wherever a thoreated filament is used.

Any comments?
Richard Brunner, AA1P
rbrunner@gis.net

Ref. 1 Radio Engineers Handbook, Terman, 1943, Page 316
Ref. 2 Pulse Generators, Glasoe & Lebacqz, Dover, 1948, Ch. 3

A

End of BOATANCHORS Digest 2097
****

>From ???@??? Mon Jun 22 01:33:17 1998
Message-Id: <199806200322.WAA14069@sco.theporch.com>
Date: Fri, 19 Jun 1998 22:20:34 CDT
Subject: BOATANCHORS digest 2098

BOATANCHORS Digest 2098

Topics covered in this issue include:

1) Re: Early Electronic Computers
by William Donzelli <william@ans.net>
2) National NHU rcvr
by Ralph Parker <rparker@istar.ca>
3) Re: first computer ?
by ail0@lehigh.edu (ARTHUR I. LARKY)
4) RE: first computer ?
by "Marll McDonald, InfoDesign, DTN 223-6882" <m_mcdonald@meta.ENET.dec.com>
5) RE: clarification on first computer question
by "Laudon, Kenneth (Kalman) A." <klaudon@pica.army.mil>
6) Early computers
by "Steve Hill" <SHILL@onaustralia.com.au>
7) Re: first computer ?
by "Jim Zellmer" <zellmer@raccoon.com>
8) Re: first computer ?
by Bill Jarvis <B.H.Jarvis@hw.ac.uk>
9) Re: (Sencor) Tube Testi
by "Walter L. Marshall" <wmarshal@CapAccess.org>
10) Early tube computers
by Bill Hawkins <bill@iaxs.net>

```
 11) Re: For Sale List
     by Sandra L Knepper <slkst29+@pitt.edu>
 12) Re: Early computers
     by ail0@lehigh.edu (ARTHUR I. LARKY)
 13) Re: Sencor MU150 Tube Tester
     by ail0@lehigh.edu (ARTHUR I. LARKY)
 14) S Meter Repair
     by Dick Dillman <ddillman@igc.apc.org>
 15) FS: ART-13 Calibration book copy, schematics, conversion article
     by Michael Crestohl <mc@sover.net>
 16) Clegg 99er dual con blues
     by MNHopkins@aol.com
 17) Placerville Swap Meet Sunday????
     by Eugene Rippen <soundval@foothill.net>
 18) trade
     by k5jv@vonl.com (Lon W. Cottingham)
```

Date: Fri, 19 Jun 1998 16:23:34 -0400 (EDT)
From: William Donzelli <william@ans.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: Early Electronic Computers
Message-Id: <Pine.GSO.3.96.980619161824.25011A-100000@titan.purch.ans.net>
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

Well, well, well...parallel threads...

For lots of good discussions concerning the first computer, interested people should check out the CLASSICOMP list. There is a daily archive located at <http://www.heydon.org/kevan/classiccmp>, although apparently the sight has bee having a bit of trouble lately. The thread has been going on for a few days now.

William Donzelli
william@ans.net

Message-Id: <3.0.5.16.19980619140612.2b87a7b2@istar.ca>
Date: Fri, 19 Jun 1998 14:06:12 -0700
To: Old Tube Radios <boatanchors@theporch.com>
From: Ralph Parker <rparker@istar.ca>
Subject: National NHU rcvr
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"

Hi gang:
Browsing through some old QSTs the other day, I found an ad for a National

NHU receiver, 27-62 mcs, turret bandswitching (August 1939, cover III). I've been around a bit, but have never even heard of this one. Was it ever produced? Anybody seen one?
73, Ralph, VE7XF

Message-Id: <199806192110.RAA25538@ns5-1.CC.Lehigh.EDU>
Date: Fri, 19 Jun 1998 17:10:07 EDT
From: ail0@lehigh.edu (ARTHUR I. LARKY)
Subject: Re: first computer ?
To: Old Tube Radios <boatanchors@theporch.com>

Pete mccollum@ssdevo.enet.dec.com asked:

>Hi all,
>My brother-in-law works for a large computer-game company, and he is a designer on a game that involves "the first computer".
>I volunteered to help with a little research.
>
>So, what exactly was the First computer? Is there any single machine that clearly was first? Personally, I believe that ENIAC was first.
>
>What tube type/types were used as the basic logic elements?

My recollection is that they were twin-triode connected as flip-flops in a ring counter. The machine was decimal, so there were 10 flip-flops in each ring and, I don't recall how many, rings made up an accumulator. I believe it was 10. I'll have to look at the patent to find out. Originally, it was designed to be programmed by patch cords but, early on, they realized to awkwardness of that and switched it over to programming it with a ROM made up of rows of 10-position rotary switches.

The operating voltages on the tubes were de-rated to improve their service life.

>
>Any historical anecdotes are appreciated.
>
>Thanks,
>Pete
>mccollum@ssdevo.enet.dec.com

Pete:
It all depends upon your definition of "computer". If you mean first digital computer - Babbage in the 19th century. If you mean first electronic digital computer in the USA - ENIAC built at the UofPA during the second world war. (There may be earlier ones in Europe.) Probably the

first digital computer design to be more than one-of-a-kind was EDVAC (also Uof P) which got copied (more or less) as ORDVAC, JONNIAC (with different storage), one in Australia, etc. The Bendix G-15 always looked to me like an "updated" version of EDVAC.
By the way, EDVAC was used for a decade or more at Aberdeen Proving Grounds. The original memory was mercury delay lines, but it was updated to core memory later on.
Whirlwind at MIT started out as an analog computer but was revised to be digital after ENIAC.

John Atanasoff claimed to have designed the first digital computer and to have revealed its secrets to John Machley. His (Atanasoff's) machine never was completed so it can't be considered the first working computer. I have a copy of his original design and some copies of photos of the unfinished machine.

I testified in a trial in Minneapolis in 1971 about what I thought was a flaw in his design. It was intended to be a special purpose machine for solving linear equations whose intermediate results were stored temporarily by burning holes in sheets of paper using sparks.

I know very little about non-USA machines, but I believe that the Manchester machines came after ENIAC.
IBM also made some electromechanical digital computers using tabulator wheels. I have the manual for the Harvard Mark I which was the first one of that series. If you look around you may be able to find copies of table of Bessel and Legendre functions calculated by the Mark I and published by the Harvard Computation Laboratory.
There is much more to the story of the early days of digital computers; much of which is the subject of dispute and hindsight.

Speaking of BA's, ENIAC drew so much electricity that the UofP was reluctant to let them run it. If you want to learn about its design, get US Patent 3,120,606 by Eckert and Machley. During the final design and construction phases, ENIAC was used to do calculations relative to the Hydrogen Bomb. I believe that it turned out later that the calculations were in error, but they made it anyway!

Art K3HBA

Message-Id: <9806191958.AA11594@us6rmc.mro.dec.com>
Date: Fri, 19 Jun 98 17:22:10 EDT
From: "Marll McDonald, InfoDesign, DTN 223-6882" <m_mcdonald@meta.ENET.dec.com>
To: Old Tube Radios <boatanchors@theporch.com>
Cc: m_mcdonald@meta.ENET.dec.com
Subject: RE: first computer ?

For really interesting information about the ENIAC computer,
obtain and read its patent. The number is 3,120,606.

As I look at it and compose this message, the following
facts stand out:

* The inventors are John W. Mauchly and J. Presper Eckert
* The patent was filed in 1947 and granted in 1964, 17 years later!
* The clock speed is 100 Kc. I remember being impressed by
  my brand new Apple][+ computer in 1982 because, at 1 MHz,
  it was 10 times faster than the ENIAC!
* Some of the tubes in the 91 pages of diagrams are 6SN7,
  6L6, 6V6, and 6SA7.
* The patent is 207 pages long.

The cost is $3.00, which includes postage, for a copy of the patent.
Send a check to the Patent and Trademark Office at Washington, DC
20231. It'll arrive in 3-4 weeks.

No, this patent isn't available at http://www.uspto.gov -- the
Patent and Trademark Office's Web page -- since electronic patent
files weren't created until 1974 or thereabouts.

Marll McDonald KB1AGM
Marll.McDonald@digital.com

Message-ID: <07E473510AF0D111ADFA00A0C9B4205226F74E@mail1.pica.army.mil>
From: "Laudon, Kenneth (Kalman) A." <klaudon@pica.army.mil>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: RE: clarification on first computer question
Date: Fri, 19 Jun 1998 18:01:24 -0400
MIME-Version: 1.0
Content-Type: text/plain

I guess nobody caught the joke I was making in my post about the
improved Japanese 1-pidgeon bomb vs the Allied 3-pidgeon one.

...back on Tuesday, maybe. Have a gud w'end, all.73 de W2ES

> ----------
> From: Laudon, Kenneth (Kalman) A.[SMTP:klaudon@pica.army.mil]
> Reply To: klaudon@pica.army.mil
> Sent: Friday, June 19, 1998 11:40 AM
> To: Old Tube Radios
> Subject: RE: clarification on first computer question
> Importance: High

>
> Clarence Owens wrote:
>
> > By the way, my all-time favorite in the book is the WWII
> > pigeon-controlled
> > bomb for naval use invented and developed (but never deployed) with
> > the help
> > of B. F. Skinner. Used three trained pigeons pecking at little
> > mirrors in a
> > majority logic scheme to steer the bomb to the ship. Must have had
> > some
> > tubes in there somewhere!
> >
> This is a textbook example of how we (the US) came up with an original
> idea, that the Japanese then "borrowed" and improved upon greatly! By
> using a single, smarter pidgeon, they eliminated the need for the
> logic
> to compute the fire-control solution by majority vote. Also, the
> pidgeon requirement was reduced by 67 percent.
>
> My week for sarcasm.
>
> 73, Kalman W2ES
>

From: "Steve Hill" <SHILL@onaustralia.com.au>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Early computers
Date: Sat, 20 Jun 1998 07:22:49 +1000
MIME-Version: 1.0
Content-Type: text/plain; charset=ISO-8859-1
Content-Transfer-Encoding: 7bit
Message-Id: <21583992718552@domain2.bigpond.com>

The first computer that met the definition of being a computer was ENIAC.

Babbage's difference engine was the first computer ever designed
(a couple of hundred years earlier) but was never completed.

To qualify as a computer, the device must follow the Von Neuman
architecture.

It must have, storage capacity, the ability to execute a program,
input and output ability, and a processing section

ie it must have the following blocks.

```
PROGRAM EXECUTION UNIT
MEMORY
I/O
CPU

Note that this is the same basic architecture that the one you are
using now has.

Cheers
-----------------------
Steve Hill      VK4CZT
<SHILL@onaustralia.com.au>
visit my military radio page
<http://www.users.bigpond.com/SHILL>
39 Banbury St
Carina. 4152.
Brisbane. Australia

------------------------------
Message-ID: <00b301bd9bcd$ed2b97e0$11865aa5@Pzellmer.raccoon.com>
From: "Jim Zellmer" <zellmer@raccoon.com>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: first computer ?
Date: Fri, 19 Jun 1998 17:02:17 -0500
MIME-Version: 1.0
Content-Type: text/plain;
     charset="iso-8859-1"
Content-Transfer-Encoding: 7bit

A good claim can be made by Iowa State University with the Atanasoff-Berry
Computer 55 years ago.

Check out http://www.scl.ameslab.gov/ABC/

TNX  Jim Zellmer

-----Original Message-----
From: Pete McCollum 19-Jun-1998 0753 -0600 <mccollum@ssdevo.ENET.dec.com>
To: Old Tube Radios <boatanchors@theporch.com>
Date: Friday, June 19, 1998 8:53 AM
Subject: first computer ?


>Hi all,
>My brother-in-law works for a large computer-game company, and he is
>a designer on a game that involves "the first computer".
>I volunteered to help with a little research.
>
```

```
>So, what exactly was the First computer? Is there any single machine
>that clearly was first?
>
>What tube type/types were used as the basic logic elements?
>
>Any historical anecdotes are appreciated.
>
>Thanks,
>Pete
>mccollum@ssdevo.enet.dec.com
>

------------------------------
Message-Id: <199806192326.AAA24892@punt2.hw.ac.uk>
MIME-Version: 1.0
To: Old Tube Radios <boatanchors@theporch.com>
From: Bill Jarvis <B.H.Jarvis@hw.ac.uk>
CC: boatanchors <boatanchors@theporch.com>,
        mccollum <mccollum@ssdevo.ENET.dec.com>
Date: Sat, 20 Jun 1998 00:26:38 +500
Subject: Re: first computer ?

On 1998-06-19 zellmer@raccoon.com said:
    A good claim can be made by Iowa State University with the
    Atanasoff-Berry Computer 55 years ago.
    Check out http://www.scl.ameslab.gov/ABC/
    TNX  Jim Zellmer
    -----Original Message-----
    Date: Friday, June 19, 1998 8:53 AM
    >Hi all,
    >My brother-in-law works for a large computer-game company, and he
    >is a designer on a game that involves "the first computer".
    >I volunteered to help with a little research.
    >So, what exactly was the First computer? Is there any single
    >machine that clearly was first?
    >What tube type/types were used as the basic logic elements?
    >Any historical anecdotes are appreciated.
    >Thanks,
    >Pete
    >mccollum@ssdevo.enet.dec.com

Do you include Analogue Computers? VW solved the differential equation
of "critical" damping of the suspension using an analogue computer which
contained only 3 op-amps, each of which used only 2 double-triode tubes.
That was around 1935. Analogue computers continue to excel in solving
equations which contain the operators +, -, x, divide, and integrate.
```

============   =====   =====   BILL J.   =====   =====   ============
GM8APX, qthr   Edinburgh, Scotland, UK

Laborant montes, parturiunt haec mus

Net-Tamer V 1.11 - Registered

Date: Fri, 19 Jun 1998 19:37:29 -0400 (EDT)
From: "Walter L. Marshall" <wmarshal@CapAccess.org>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: (Sencor) Tube Testi
Message-ID: <Pine.SUN.3.91-FP.980619193532.20061E-100000@cap1.capaccess.org>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

"BTW, my EICO 667 manual gives instructions on how to generate switch settings for any tube you can plug in. Do all tester manuals do this,"

Ditto for the MU150 Continental
Lon

Date: Fri, 19 Jun 1998 18:44:10 -0500 (CDT)
From: Bill Hawkins <bill@iaxs.net>
Message-Id: <199806192344.SAA11646@citrus.iaxs.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Early tube computers

Followed the link to the Anatasoff - Berry machine, which led to this interview with Ken Olsen at www.si.edu/resource/tours/comphist/olsen.html
Large snip here ...

DKA: Had you ever seen anything [as big as Whirlwind] before?

KO: Oh, no, you see, during the war a radar set with 150 tubes was amazing. 150 tubes was just out of this world. You couldn't conceive of that. That building, what with 10,000 tubes, that just was way out. Now a large part of it was war surplus equipment. Many of the tubes were war surplus. One way of getting large numbers of things at an inexpensive price. The history of Whirlwind goes something like this. ...

... One of the problems we had in those days was that there was no oscilloscopes to look at high speed circuits. Tektronix was not yet in business. We had war surplus, Sylvania syncroscopes which were quite a large box with almost nothing in the box. The five inch cathode ray tube, and in order to use it we cut a hole in the top. Every engineer did his own. I learned from Dick Best how to do it. Cut a hole in the top and put the wire right into the deflection plate with no amplifier. The deflection plates had sensitivity as 60 or 70 volts per inch. So if you were looking at 10 volt pulses, you would see about a sixth of an inch high pulse on the screen. ...

End of fragment of 43 page interview. Fascinating stuff. Ah, for the good old days.

Regards,
Bill Hawkins

Date: Fri, 19 Jun 1998 19:46:59 -0400 (EDT)
From: Sandra L Knepper <slkst29+@pitt.edu>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Re: For Sale List
Message-ID: <Pine.GSO.3.96L.980619194635.11573B-100000@unixs1.cis.pitt.edu>
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

Dave, W3ST
Publisher of the Collins Journal
Homepage: http://www.pixi.com/~jenkins/collins

On Fri, 19 Jun 1998, Sandra L Knepper wrote:

> I am having a private partial sale of my Collins collection. Prefer
> pickup since the collection is quite extensive.
>
> If you would like to be sent this list, please so indicate. I do not
> believe in "advertising" on this reflector since it is intended for the
> sharing of information on Collins. I will repost the list to you by
> E-mail. Please do not telephone. NO, I am not getting out of Collins!
>
> Thank you.
>
> Dave, W3ST
> Publisher of the Collins Journal
> Homepage: http://www.pixi.com/~jenkins/collins
>
> --- --- --- --- --- --- --- --- --- --- --- --- --- --
> To subscribe: listserv@listserv.tempe.gov
> and in body: subscribe COLLINS yourfirstname yourlastname
> To unsubscribe: listserv@listserv.tempe.gov

> and in body: signoff COLLINS
> Archives for COLLINS: http://www.tempe.gov/archives
> --- --- --- --- --- --- --- --- --- --- --- --- --- --
>

Message-Id: <199806192353.TAA55542@ns5-1.CC.Lehigh.EDU>
Date: Fri, 19 Jun 1998 19:53:52 EDT
From: ail0@lehigh.edu (ARTHUR I. LARKY)
Subject: Re: Early computers
To: Old Tube Radios <boatanchors@theporch.com>

>The first computer that met the definition of being a computer was ENIAC.

I agree.
>
>Babbage's difference engine was the first computer ever designed
>(a couple of hundred years earlier) but was never completed.

IBM actually made of model of it 100 years or so later.
>
>To qualify as a computer, the device must follow the Von Neuman
>architecture.

Not true. The Harvard Mark I was not a "Von Neuman"
architecture, but it was a computer. The "Von Neuman achitecture" was
invented by Eckert and Mauchley for their EDVAC computer.
>
>It must have, storage capacity, the ability to execute a program,
>input and output ability, and a processing section

>
>ie it must have the following blocks.
>
>PROGRAM EXECUTION UNIT
>MEMORY
>I/O
>CPU

I'm not sure how you are separating the Program Execution Unit from the CPU.
I always think of the former as part of the latter.
>
>Note that this is the same basic architecture that the one you are
>using now has.

All of which was in EDVAC (and ENIAC), but NOT Atanasoff. The difference
between ENAIC and EDVAC was that the program store in ENIAC was separate from
the data store.

EDVAC combined them both in the same (mercury delay line) storage. This meant that the program could operate on the program as data, thus making loops easier to program. The Intel architecture (a) permits one to make a logical and physical separation between program and data, if one wants, and (b) tends to discourage one from using the program to modify instructions in memory. The program memory in ENIAC and Mark I was read-only and could not be modified by the program execution. The Intel design allows one to write programs in ROM by having a separate CodeSegment register. One of the first computers which I worked on was the LGP-30 in which one had to modify the address of instructions by means of the program in order to create a program loop. But I was able to develop a technique for writing programs which ran in ROM memory by copying the steps which needed to be modified out to Read/Write memory (a rotating drum), executing them there and then returning to the ROM memory for the next steps. Self-modifying programs are bad form now-a-days.

[I suspect that there is a better forum for this discussion, vacuum-tubes or no; particularly since Mark I was electromechanical and based on relays and tabulator wheels.]

Art K3HBA

>
>Cheers
>-----------------------
>Steve Hill   VK4CZT
><SHILL@onaustralia.com.au>
>visit my military radio page
><http://www.users.bigpond.com/SHILL>
>39 Banbury St
>Carina. 4152.
>Brisbane. Australia
>

Message-Id: <199806200005.UAA28606@ns5-1.CC.Lehigh.EDU>
Date: Fri, 19 Jun 1998 20:05:39 EDT
From: ail0@lehigh.edu (ARTHUR I. LARKY)
Subject: Re: Sencor MU150 Tube Tester
To: Old Tube Radios <boatanchors@theporch.com>

>   Thanks for the tip. Why did they think it was important to include
>current gain, when tubes are voltage devices?

Because pentode tubes are current gain devices. They have a very high plate resistance and can best be characterized as a voltage-controlled current source in parallel with a high resistance. Triodes and tetrodes on the other hand are best characterized by a voltage -controlled voltage source in series with the plate resistance. They are both equivalent, one is the Thevenin

equivalent model and the other is the Norton equivalent model, but triodes fit the one model and pentodes the other.
Art KeHBA

> Thanks,
> Lon
>

Date: Fri, 19 Jun 1998 18:56:07 -0700 (PDT)
Message-Id: <2.2.16.19980619185233.0e1fb9de@pop.igc.org>
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: Old Tube Radios <boatanchors@theporch.com>
From: Dick Dillman <ddillman@igc.apc.org>
Subject: S Meter Repair

I can't abide a receiver without a S meter. That's why when a RCA AR-88LF with the uncommon factory S meter became available I grabbed it.

Upon arrival the S meter seemed okay electrically but appeared to be hanging up mechanically. Whether this was due to the tender mercies of UPS which had caused a significant dent in the steel case on the same side as the S meter one does not know... but one suspects. In any case the task was to get the S meter, a Simpson model 25 a heart, repaired.

Standard Meter Lab in nearby Livermore has a reputation for competence with older analog meters and they had overhauled a Simpson 260 for me last year. So I decided to entrust the meter to them and to deliver it in person to check out their operation.

I was hoping for white haired technicians in lab coats and green eye shades with loupes screwed into their eyes. But Standard Meter Lab is a modern operation with clean rooms and state of the art calibration facilities and nary a green eye shade to be seen. I was given a friendly tour of all parts of the facility and by the time it was over I deemed Standard Meter Lab worthy to repair my meter and forked it over.

The repaired meter arrived today, two weeks after my visit, as promised. Of course I immediately installed it and it's following the carrier level of the BBC in a dignified manner as I type. According to the work order the meter was cleaned, checked for deflection, the pivots adjusted and the meter calibrated. The cost was $45 which is probably the minimum charge for about one hour on the bench.

Based on my experience with Standard Meter Lab I feel I can recommend them to anyone requiring analog meter repair.

Standard Meter Lab
236 Rickenbacker Circle
Livermore, CA 94550
Phone: 925-449-0220
Fax: 925-339-1704

Regards,

Dick

Dick Dillman
<ddillman@igc.apc.org>
WPE2VT W6AWO
Collector Of Heavy Metal:
Harleys, Willys and Radios Over 100lbs.

Date: Fri, 19 Jun 1998 22:34:48 -0400 (EDT)
From: Michael Crestohl <mc@sover.net>
Message-Id: <199806200234.WAA24160@granite.sover.net>
To: Old Tube Radios <boatanchors@theporch.com>
Subject: FS: ART-13 Calibration book copy, schematics, conversion article

Hi Gang:

Picked this up at a hamfest - its a binder with copies of the ART-13 transmitter caligration book, large schematics and an article from November 1946 CQ Magazine on converting the ART-13. I figured someone here might need it and gave the guy selling it the $10.00 he was asking for it.

Anyone need it for $10.00 plus postage??

73,

Michael, W1RC
mc@sover.net

From: MNHopkins@aol.com
Message-ID: <d0efcb7b.358b2121@aol.com>

Date: Fri, 19 Jun 1998 22:40:32 EDT
To: Old Tube Radios <boatanchors@theporch.com>
Cc: 50mhz@qth.net
Mime-Version: 1.0
Subject: Clegg 99er dual con blues
Content-type: text/plain; charset=US-ASCII
Content-transfer-encoding: 7bit

I loan out rigs for the VHF contest. Six Meter Transceiver and a 9-foot dipole fed with 75 OHM puts you on the Magic Band FB.

My Clegg 99er is back (no sign of the Hallicrafter SR-46a for two weeks and I don't loan out the Tomcat Six, thankfully) but I have a problem

The 99er is a small, pretty rig that fits my rack just right and I want to use it on RX for modes other than AM, so I went over to the Six Club website (www.6mt.com) and pulled up the manual. I printed the diagram, but only got one side of it -- the side with the 456 IF, not the tuner. Lisa says that is what she got from Ed Clegg.

So I don't even know what the first IF is, altho I suspect something around 10mc. I could just tap the 456, of course, but going at them without the whole picture has been a disaster in the past.

Thus look for me at 50.400 tomorrow and Sunday in the SMIRK contest with the Clegg, and at 50.090 with the ICM STP-50, but if you have a Clegg 99er diagram or special knowledge of this rig, please contact me.

73 de ab5L, michael in dallas, student of Tecraft and International (ICM) ham products and mementoes of Six Meters' Golden Age: 1957-58
Michael Hopkins
Box 226841
Dallas, TX 75222 MNHopkins@AOL.com

Message-ID: <358B2212.984@foothill.net>
Date: Fri, 19 Jun 1998 19:44:34 -0700
From: Eugene Rippen <soundval@foothill.net>
MIME-Version: 1.0
To: Old Tube Radios <boatanchors@theporch.com>
Subject: Placerville Swap Meet Sunday????
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

Is there a swap meet at Placerville
this Sunday.
If so, where and when.

Maybe some description of how to get there, too.

Gene

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Message-ID: <014101bd9bfa$a008c320$690adfd0@k5jv.kingwoodcable.com>
From: k5jv@vonl.com (Lon W. Cottingham)
To: Old Tube Radios <boatanchors@theporch.com>
Subject: trade
Date: Fri, 19 Jun 1998 22:21:59 -0500
MIME-Version: 1.0
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Greetings to all,

        I have a nice looking Drake 2-BQ speaker, Q-multiplier that I =
would like to trade for a  nice looking 2-AQ.

73 de Lon, K5JV

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Drake 2-BQ=20
speaker, Q-multiplier that I would like to trade for a&nbsp; nice =
looking=20
2-AQ.</DIV>
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End of BOATANCHORS Digest 2098
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